

**Listing of
Units of Competence
and
Index to Record and Report Sheets**

AUR 322 99 (Marine) Mechanics (Marine Stream)

Compulsory Common Core						
Work Evidence Report No.	Unit Number	Competency Unit Title	Work Evidence Required	Record Page No	Report Page No	Date Presented to RTO
7075WA	AUR01166A	Repair engines and associated engine components	Yes	7	31	
7075WB	AUR02166A	Service cooling/exhaust systems	Yes	9	32	
	AUR05166A	Repair exhaust systems				
	AUR02170A	Repair cooling systems and associated components				
7075WC	AUR03166A	Service petrol fuel systems	Yes	11	33	
	AUR03170A	Repair petrol fuel systems				
7075WD	AUR07671A	Service and repair marine transmission (outboard and sterndrive)s	Yes	12	34	
	AUR14166A	Repair jet drive propulsion systems				
	AUR14170A	Service jet drive propulsion systems				
7075WD	AUR06166A	Repair clutch assemblies, assoc systems	Yes	21	34	
	AUR06170A	Service clutch assemblies, assoc systems				
	AUR07771A	Service and repair marine transmissions (inboard)				
	AUR13666A	Repair propeller drive systems				
	AUR13670A	Service propeller drive systems				

Compulsory Stream (Cont.)						
Work Evidence Report No.	Unit Number	Competency Unit Title	Work Evidence Required	Record Page No	Report Page No	Date Presented to RTO
7075WE	AUR20031A	Install marine electrical systems or components	Yes	13	35	
	AUR20066A	Repair marine electrical systems or components				
7075WF	AUR20666A	Repair ignition systems	Yes	14	36	
	AUR21171A	Service and repair electronic engine management systems				
7075WG	AUR37271A	Service and repair of trailers	Yes	16	37	
	AUR46108A	Carry out minor hull repairs				
7075WH	AUR46131A	Install inboard marine engines, controls, instruments	Yes	17	38	
	AUR46927A	Identify the need for water testing of vessels				
7292GW	AUR23608A	Carry out welding, soldering, thermal cutting	Yes	18	39	
7116SA	AUR66108A	Carry out diagnostic procedures	No	N/A	N/A	
N/A	AUR70713A	Comply with laws, regulations & codes of practice relating to the industry	No	N/A	N/A	

Listing of Units
Off the Job Modules,
Change of Employment Details
and Additional
Training Course Competencies

Marine Stream Specific

Unit No	Unit Title	Module No	Module Name	Result	Attend / Actual Possible
AUR01166A	Repairs to engines & associated engine components	7075A	Marine outboard engine service and repair		
		7075B	Marine inboard engine service and repair		
AUR02166A AUR02170A AUR05166A	Repair/service cooling/exhaust system	7075C	Marine cooling and exhaust systems		
AUR03166A AUR03170A	Repair/service petrol fuel systems	7075D	Marine petrol fuel systems		
AUR07671A AUR14166A AUR14170A	Repair/service marine transmission, Jet propulsion systems	7075E	Marine outboard & sterndrive transmissions		
AUR06166A AUR06170A AUR07771A AUR13666A AUR13670A	Repair/service clutch/propeller systems	7075F	Marine inboard transmissions		
AUR20031A AUR20066A	Install/repair/service marine electrical systems /communications	7075G	Install/repair/service marine electrical systems /communications		
AUR20666A AUR21171A	Repair/service ignition/electronic systems	7075H	Marine ignition systems		
		7075J	Marine engine management systems		

Unit No	Unit Title	Module No	Module Name	Result	Attend Actual/ Possible
AUR23608A	Welding, soldering, thermal cutting/heating procedures	7292G	Automotive heating and welding procedures		
AUR37271A AUR46108A	Repair/service trailer/hulls	7075K	Service and maintenance of marine rigs		
AUR46131A AUR46927A	Install marine engines/water test vessels	7075L	Engine installation and boat testing		
AUR66108A	Carry out diagnostic procedures	7075M	Marine systems diagnostics		
AUR70713A	Comply with laws and regulations	7075Q	Marine regulations and safety		
AUR03666A	Repair diesel fuel injector systems	7075P	Diesel systems repair and service		
AUR03670A	Service diesel fuel injector systems	7075P	Diesel systems repair and service		
AUR03145A	Overhaul petrol fuel system components	7075D	Marine petrol fuel systems		
AUR09170A	Service hydraulic systems	7075N	Marine hydraulic systems		
AUR09166A	Repair hydraulic systems	7075N	Marine hydraulic systems		
AUR13631A	Install inboard propeller drive systems	7075L	Engine installation and boat testing		
AUR21831A	Install marine electronic systems/components	7075Q	Marine regulations and safety		
AUR31649A	Prepare vehicle/vessel/component /equipment for customers use	7075R	Customer service		

Other Training Courses

Completed

**Listing of
Off the Job Modules and
Change of Employment Details**

Change of Employer Details

SECOND EMPLOYER

Commencement of Employment: _____

Transfer or Termination of Employment: _____

Company or Business Name: _____

Trading Name (if different from above): _____

Address: _____

Contact Details: Phone: _____ **Mobile:** _____

FAX: _____ **E-mail:** _____

Change of Employer Details

THIRD EMPLOYER

Commencement of Employment: _____

Transfer or Termination of Employment: _____

Company or Business Name: _____

Trading Name (if different from above): _____

Address: _____

Contact Details: Phone: _____ **Mobile:** _____

FAX: _____ **E-mail:** _____

Change of Employer Details

FOURTH EMPLOYER

Commencement of Employment: _____

Transfer or Termination of Employment: _____

Company or Business Name: _____

Trading Name (if different from above): _____

Address: _____

Contact Details: Phone: _____ **Mobile:** _____

FAX: _____ **E-mail:** _____

OFF THE JOB MODULE DESCRIPTORS

Marine Outboard Engine Systems 7075A	Nominal Duration: 72 hours.
MODULE PURPOSE: This module provides the marine mechanical apprentice with the knowledge and skills to test and identify faults and repair marine outboard engines systems.	
On successful completion of this module the learner should be able to:	
<ul style="list-style-type: none">• List and apply the legislated, environmental and industry requirements for the service and repair of marine 2 and 4 stroke outboard engines.• List and explain the correct component part and major assembly terminology used by various marine outboard 2 and 4 stroke engine manufacturers and component suppliers.• Identify and explain the operating principles and scavenging systems used in 2 stroke and 4 stroke outboard engines together with the identification of the various designs of powerheads and midsections used by marine outboard engine manufacturers.• Identify and state the causes of combustion and water ingress problems associated with marine 2 and 4 stroke outboard engines.• List the procedures for and perform the removal and refit of the components in the fuel, lubrication, ignition, cooling and failsafe/warning systems fitted to 2 and 4 stroke outboard powerheads and midsections.• List and explain the procedures for and perform the removal, dismantling, repair, reassembly and installation of 2 and 4 stroke outboard powerheads and their associated systems to manufacturers recommendations.• List the procedures for and perform the dismantling, identification, inspection for serviceability repair and reassembly of marine outboard engine midsections and their component parts• Perform diagnostic and overhaul procedures on marine out board 2 and 4 stroke powerheads and midsections so as to collect measurements, data and other types of information for analysis.• Demonstrate the ability to collect, analyse, assess and organise information required in the diagnosis and overhaul, service and repair of marine 2 and 4 stroke outboard engines	
This module will provide underpinning knowledge and develop skills for the following modules, 7075A Outboard Engine Service and Repair. 7075G Installation and Repair of Marine Electrical Systems and 7075L Engine installation and boat testing	
PREREQUISITES: Compulsory modules – Automotive Mechanical and Electrical.	

Marine Inboard Engine Systems 7075B

Nominal Duration: 72 hours.

MODULE PURPOSE: This module provides the marine mechanical apprentice with the knowledge and skills to test and identify faults and repair marine inboard engines..

On successful completion of this module this learner should be able to:

- Apply all Occupational Health and Safety and Institute policies and regulations.
- Diagnose and establish causes of faults in engines.
- Identify/list the procedure for the rectification of faults in marine inboard engines.
- Dis-assemble and re-assemble petrol and diesel engines to manufacturer's specifications.
- Recondition cylinder heads and their components.
- Measure and assess pistons, piston rings and connecting rods for serviceability.
- Measure and assess cylinder blocks and liners for serviceability.
- Measure and test crankshafts for serviceability.
- Measure and evaluate camshafts, camshaft drives and valve trains for serviceability.
- Inspect and repair lubrication system components.
- Test engines to determine correct assembly.

PREREQUISITES: Compulsory modules – Automotive Mechanical and Electrical.

Marine Outboard Engine Systems 7075C **Nominal Duration: 16 hours.**

MODULE PURPOSE: This module provides the marine mechanical apprentice with the knowledge and skills to service, repair and diagnose inboard and outboard engine cooling and exhaust systems, and develop skills acquired in modules 7292AA, 7292C, and 7292DA

On successful completion of this module the learner should be able to:

- State and demonstrate safe working habits
- Explain the operation of marine cooling and exhaust systems
- Maintain and service marine cooling and exhaust systems
- Identify and rectify corrosion and exposure problem on marine cooling and exhaust systems
- Identify and list the procedure for the rectification of faults in cabling and exhaust system.
- Repair marine cooling and exhaust systems
- Perform dismantling, inspection and reassembly procedures on marine cooling and exhaust systems according to manufactures specifications
- Perform diagnostic procedure (test and identify faults) on marine cooling and exhaust systems

This module will provide underpinning knowledge and develop skills for the following module 7075M Marine Systems Diagnostics

PREREQUISITES: Compulsory modules – Automotive Mechanical and Electrical.

Marine Petrol Fuel Systems 7075D

Nominal Duration: 72 hours.

MODULE PURPOSE: This module provides the marine mechanical apprentice with the knowledge and skills to diagnosis, service, and repair of marine outboard and inboard petrol fuel and induction systems

On successful completion of this module the learner should be able to:

- List the legislated and environmental requirements for service and repair of marine petrol outboard and inboard fuel system and induction systems
- Identify the various petroleum based fuels used in outboard and inboard petrol fuel systems
- Interpret and explain marine fuel system schematic diagrams
- List, identify and explain the various types of marine outboard and inboard petrol fuel and induction systems.
- Perform service, repair and maintenance procedures on marine outboard and inboard petrol fuel induction systems and their component parts using manufacturer's technical publications and with reference to current industry standards.
- Perform diagnostic procedures on marine outboard and inboard petrol fuel and induction systems.
- Demonstrate the ability to collect, analyse and organise information required in the service and repair of marine outboard and inboard petrol fuel and induction systems

This module will provide underpinning knowledge and develop skills for the following modules, 7075A Outboard Engine Service and Repair and 7075B Inboard Engine Service and Repair

PREREQUISITES: Compulsory modules – Automotive Mechanical and Electrical.

Marine Outboard and Sterndrive Transmissions 7075E

Duration: 36 hours.

MODULE PURPOSE: This module provides the marine mechanical apprentice with the knowledge and skills to diagnosis, removal, dismantling, repair, reassembly and service of marine inboard water jet and sterndrive assemblies and outboard engine gearcase and water jet assemblies, and their control systems together with final adjustment and test procedures prior to delivery to customers of the marine mechanical repair industry.

On successful completion of this module the learner should be able to:

- List and apply the legislated, environmental and industry requirements for the service and repair of marine outboard and inboard gearcase assemblies, sterndrive assemblies and water jet assemblies.
- List and explain the correct component part and major assembly terminology used by various marine outboard and inboard gearcase assembly, sterndrive assembly and water jet assembly manufacturers and component suppliers.
- Identify and explain the operating principles and powerflows used in outboard gearcase and inboard sterndrive assemblies, and water jet assemblies used by marine engine manufacturers and component suppliers.
- Identify and state the causes of gear tooth erosion and collapse, shaft failure through impact and constant load and water ingress problems associated with marine inboard sterndrive and outboard gearcase and water jet transmission assemblies.
- List the procedures for and perform the removal, dismantling, inspection for serviceability, reassembly, refit and adjustment of the various steering and control systems used by marine inboard sterndrive and outboard gearcase and water jet transmission assembly manufacturers and component suppliers.
- List and explain the procedures for and perform the identification removal, dismantling, repair, reassembly and installation of various marine outboard and inboard gearcase assemblies, sterndrive assemblies and water jet assemblies to manufacturers' recommendations.
- Perform diagnostic procedures on various marine outboard and inboard gearcase assemblies, sterndrive assemblies and water jet assemblies to manufacturers' recommendations so as to collect measurements, data and other types of information for analysis.
- Demonstrate the ability to collect, analyse, assess and organise information required in the diagnosis, service and repair of various marine outboard and inboard gearcase assemblies, sterndrive assemblies and water jet assemblies to manufacturers recommendations.
- Perform overhaul procedures on marine outboard and sterndrive transmission.

This module will provide the underpinning knowledge and skills for the following module, 7075M Marine Systems Diagnostics

Marine Outboard and Sterndrive Transmissions 7075E	Duration: 36 hours.
PREREQUISITES: Compulsory modules – Automotive Mechanical and Electrical.	
7075A Outboard Engine Service and Repair, 7075F Marine Inboard Transmissions, 7075G Installation and Repair of Marine Electrical Systems, 7075L Engine Installation and Boat Testing	

Marine Inboard Transmissions 7075F	Nominal Duration: 36 hours.
MODULE PURPOSE: This module provides the marine mechanical apprentice with the knowledge and skills to service, repair and diagnose marine inboard transmissions and clutches, and develop skills acquired in modules 7292AA and 7292C.	
On successful completion of this module the learner should be able to:	
<ul style="list-style-type: none"> • State and demonstrate safe working habits • Explain the operation of marine clutches and inboard transmissions • Service marine clutches and inboard transmissions • List and identify the procedure for the rectification of faults in marine clutches of inboard transmission. • Repair marine clutches and inboard transmissions • Test and identify faults in marine clutches and inboard transmissions 	
This module will provide underpinning knowledge and develop skills for the following modules, 7075M Marine Systems Diagnostics and 7075P Installation of Inboard Propeller Drive Systems	
PREREQUISITES: Compulsory modules – Automotive Mechanical and Electrical.	

Installation of Marine Electrical Systems 7075G	Duration: 36 hours.
MODULE PURPOSE: This module provides the marine mechanical apprentice with the knowledge and skills to carry out the installation and carry out repairs of marine electrical systems and components and further develops those skills acquired in modules 7292F and 7292FA.	
On successful completion of this module the learner should be able to:	
<ul style="list-style-type: none"> • Apply all Occupational Health and Safety and Institute policies and regulations. • Explain the operation of low voltage marine electrical systems • Repair low voltage marine electrical systems and components • Test and identify faults in low voltage marine electrical systems and components • Install low voltage marine electrical systems and components. <p>This module will provide underpinning knowledge and skills for the following modules, 7075H 7075J</p>	
PREREQUISITES: Compulsory modules – Automotive Mechanical and Electrical.	

Marine Ignition Systems 7075H	Nominal Duration: 48 hours.
MODULE PURPOSE: This module provides the marine mechanical apprentice with the knowledge and skills to test, identify faults in and repair ignition systems of marine inboard and outboard engines.	
On successful completion of this module the learner should be able to:	
<ul style="list-style-type: none"> • Explain the operation of marine inboard and outboard engine ignition systems. • Test and identify faults in marine inboard and outboard engine ignition systems. • Identify and list the procedures for the rectification of faults in marine inboard and outboard engine ignition system. • Repair marine inboard and outboard engine ignition systems. 	
PREREQUISITES: Compulsory modules – Automotive Mechanical and Electrical.	

Marine Engine Management Systems 7075J	Duration: 48 hours.
MODULE PURPOSE: This module provides the marine mechanical apprentice with the knowledge and skills to service and repair marine engine management systems. This module also provides the knowledge and skills to extract data from, test and identify faults in marine engine management systems.	
On successful completion of this module the learner should be able to:	
<ul style="list-style-type: none"> • Apply all Occupational Health and Safety and Institute policies and regulations • Explain the operation of marine outboard and inboard engine management systems • Extract data, test and locate faults in marine outboard and inboard engine management systems • Service and repair marine outboard and inboard engine management systems 	
PREREQUISITES: Compulsory modules – Automotive Mechanical and Electrical.	

Service & Maintenance of Marine Rigs 7075K	Duration: 12 hours.
MODULE PURPOSE: This module provides the marine mechanical apprentice with the knowledge and skills to service and repairs trailers and undertake minor hull repairs and develop skills acquired in modules 7292AA and 7292BA.	
On successful completion of this module the learner should be able to:	
<ul style="list-style-type: none"> • State and demonstrate safe working habits. • State and check compliance with the legal requirement for trailers • Outline the reasons for, and areas requiring regular maintenance on trailers • Identify the adjustments required to ensure the safe transportation of marine craft • Maintain, service and repair trailers • Inspect and identify marine hulls for minor damage and deterioration • Repair minor damage to marine hulls. 	
PREREQUISITES: Compulsory modules – Automotive Mechanical and Electrical.	

Marine Engine Installation & Boat Testing 7075L Duration: 50 hours.

MODULE PURPOSE: This module provides the marine mechanical apprentice with the knowledge and skills in the setting up, installation and on water testing for diagnosis and analysis of marine inboard and outboard propulsion systems together with the selection of propellers and final settings to produce the optimum boat/motor performance to manufacturers specifications and customer requirements.

On successful completion of this module the learner should be able to:

- List the legislated, environmental and industry requirements for the setting up, installation and on water testing of hulls with various marine inboard and outboard engine combinations.
- State and explain the terminology and theory relating to propellers and boat hulls and the selection procedures for both.
- Select and install inboard and out board engines to current industry standards and marine engine manufacturers specifications.
- Carry out the selection and installation of steering /engine control systems, hull accessories and engine monitoring equipment
- List the requirements for and perform the commissioning of the installation, rectification and final adjustment of marine inboard and outboard engines installed in or on boats prior to delivery to the customer.
- Perform the inspection of various vessels using the relevant industry standards and prepare a report suitable for the customer.
- Identify the need for and perform on water testing for the purpose of engine diagnosis, propeller matching and vessel commissioning trials.

PREREQUISITES: Compulsory modules – Automotive Mechanical and Electrical, and the following modules 7075A Outboard Engine Service and Repair, 7075E Marine Outboard and Sterndrive Transmissions, 7075G Installation and Repair of Marine Electrical Systems and 7075M Marine Systems Diagnostics.

Marine Hydraulic Systems 7075N

Nominal Duration: 20 hours.

MODULE PURPOSE: This module provides the marine mechanical apprentice with the knowledge and skills for the diagnosis, service and repair marine hydraulic systems..

On successful completion of this module the learner should be able to:

- List the legislated and environmental requirements for service and repair of marine outboard hydraulic engine systems.
- Identify the various hydraulic fluids used in outboard and inboard hydraulic systems
- Interpret and explain marine hydraulic system schematic diagrams.
- List, identify and explain the various types of marine outboard and inboard hydraulic systems including oil and water based systems.
- Perform service, repair and maintenance procedures on marine outboard and inboard hydraulic systems and their component parts using manufacturer's technical publications and with reference to current industry standards.
- Perform diagnostic procedures on marine outboard and inboard hydraulic systems.
- Demonstrate the ability to collect, analyse and organise information required in the service and repair of marine outboard and inboard hydraulic systems.

This module will provide underpinning knowledge and skills for the following modules,
7075M Marine Systems Diagnostics

PREREQUISITES: Compulsory modules – Automotive Mechanical and Electrical.

Marine Diesel Fuel Systems 7075P	Nominal Duration: 24 hours.
MODULE PURPOSE: This module provides the marine mechanical apprentice with the knowledge and skills to service, test, identify faults and repair in marine diesel fuel systems and carry out service and repair procedures.	
On successful completion of this module the learner should be able to:	
<ul style="list-style-type: none"> • State and demonstrate safe working habits. • Explain the operation of marine diesel fuel systems. • Service marine diesel fuel systems. • Test and identify faults in marine diesel fuel systems. • Identify and list the procedures for the rectification of faults in marine diesel fuel systems. • Repair faults in marine diesel fuel systems. 	
PREREQUISITES: Compulsory modules – Automotive Mechanical and Electrical.	

Marine Regulations and Safety 7075Q	Nominal Duration: 8 hours.
MODULE PURPOSE: This module provides the marine mechanical apprentice with the knowledge required for the safe working habits when working on and operating vessels on enclosed waters to industry and general practices in the Marine Mechanics Trade.	
On successful completion of this module this learner should be able to:	
<ul style="list-style-type: none"> • State the licensing requirements of people in control of vessels. • State the regulations covering marine operators, installers and repairers. • State and demonstrate safe working habits in the workshop and around boats. • State the regulations covering the use of marine radio bands. 	
PREREQUISITES: Compulsory modules – Automotive Mechanical and Electrical.	

